UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/870,588	06/01/2001	Hitoshi Fukushima	04783-026002	9233

27572 7590 12/13/2002

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303

EXAMINER
TRAN, MY CHAU T

ART UNIT	PAPER NUMBER
1639	

DATE MAILED: 12/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/870,588	Applicant(s) FUKUSHIMA ET AL.	
	Examiner My-Chau T. Tran	Art Unit 1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11,12,14,15 and 17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11,12,14,15 and 17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *16 October 2002* is: a)☐ approved b)☒ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Applicant's amendment filed 10/16/02 in Paper No. 9 is acknowledged and entered. Claims 13, 16, and 18-23 are canceled. Claims 11-12, 14-15, and 17 are amended. Claims 11-12, 14-15, and 17 are pending.

Drawings

2. The drawings filed on 10/16/02 are acceptable subject to correction of the informalities indicated on the attached "Notice of Draftsperson's Patent Drawing Review," PTO-948. In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

Withdrawn Rejections

3. The previous rejections under 35 USC 112, second paragraph for claims 11-23 have been withdrawn in view of applicant's amendment of Claim 11.

4. All rejections are maintained and new rejections necessitated by amendment are set forth below with response to arguments.

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Maintained Rejections

6. Claims 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Cozzette et al. (US Patent 5,200,051).

Cozzette et al. disclose a sensor device (biosensor) that comprises an electrode and an organic film (semipermeable film), which is a polymer (Abstract; col. 14, line 20-25). The transducing element (electrode) would produce a signal from the film (col. 12, line 30-37; col. 19, line 31-39). The organic film is printed (dispensed) onto the electrode (col. 15, line 40-42; col. 26, 36-55). The Cozzette et al. device include all of the required elements of the device of the instant claim 11.

Further, in view of the newly added limitations in which '*the molecule recognizing film adsorbing aromatic molecules to change in electric impedance in connection with adsorbing the aromatic molecules inside the molecule recognizing film*' and '*the transducing element comprising a thin-film transistor*' are also disclosed by Cozzette et al. Cozzette et al. disclose the biosensor comprises a planar wafer on which a first structure comprising a base senor (col. 12, lines 27-37). Additional structures are then established over the resulting base sensor, which include a semipermeable film or permselective layer. One such permselective layer is the support matrices that possess the physical and chemical features necessary to support the various bioactive molecules that constitute the principal means for converting the particular analytes in a given analytical sample into detectable and/or quantitatively measurable species (col. 12, lines 45-51; col. 14, lines 35-39).

7. Claims 12, 14-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cozzette et al. (US Patent 5,200,051).

Cozzette et al. disclose a sensor device (biosensor) that comprises an electrode and an organic film (semipermeable film), which is a polymer (Abstract; col. 14, line 20-25). The transducing element (electrode) would produce a signal from the film (col. 12, line 30-37; col. 19, line 31-39). The organic film is printed (dispensed) onto the electrode (col. 15, line 40-42; col. 26, 36-55). The organic film forms a dot shape area (col. 15, line 40-55; col. 26, line 49-52). The solution is a silicone-base agent (silane mixture) and a solvent (organic solvent) (col. 26; line 56-59; col. 27, line 3-9).

Cozzette et al. differs from the claimed invention in failing to specifically identify the parameters of claims 12, 14-15 and 17.

However, the features of the dependent claims constitute obvious variations in parameters which are routinely modified in the art (e.g. type of film and type of solvent) and which have not been described as critical to the practice of the invention. Such modifications are considered to be routine optimizations of the conventional components of known sensor devices.

8. Claims 11-12, 14-15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heller et al. (US Patent 5,605,662) in view of Johnson (US Patent 4,216,245).

Heller et al. disclose an electronic sensor device (abstract). The device includes a microelectrode (DC mode microelectrode) and an organic film (permeation layer) (col. 9, line 18-20). The transducing element (electrode) would produce a signal from the film (col. 9, line 61-67; col. 10, line 31-43).

Heller et al. differs from the claimed invention in failing to specifically teach that the organic film is printed onto the surface of the electrode, which form dot.

Johnson teaches a technique of printing the organic thin film (reagent) on an electrode (matrix) in microdot format (col. 2, line 13-22).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Heller et al. by including the technique of printing the organic thin film onto the electrode as taught by Johnson for the well known advantage of providing a rapid method of applying the organic film to the electrode in a manner which prevents interaction.

New Rejections – Necessitated by Amendment

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 11-12, 14-15, and 17 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

The instant claims recite a sensor device comprising a circuit having electrodes and a transducing element. The electrode comprises a molecule recognizing film formed on the electrode and the molecule recognizing film absorbing aromatic molecules to change in electric impedance in connection with absorbing the aromatic molecules inside the molecule recognizing

film. The transducing element comprises a thin-film transistor and transduces the change in the electric impedance of the molecule recognizing film into electric signal.

The recitation of 'the molecule recognizing film absorbing aromatic molecules to change in electric impedance in connection with absorbing the aromatic molecules inside the molecule recognizing film' claimed in claim 11, have no clear support in the specification and the claims as originally filed. The specification in page 4 disclosed 'a sensor device comprising organic thin films formed on an arbitrarily chosen electrode board circuit and electrodes, and a transducing element to transduce information obtained by the organic thin films into electric signals' (lines 11-13) and in page 5 disclosed '...the sensor device wherein the solution of a material of the thin film comprises a mixture resulting from the dissolution of a thiol compound in a solvent, and gold thin films are formed on the surface of the electrodes' (lines 1-5) is not support for 'the molecule recognizing film absorbing aromatic molecules to change in electric impedance in connection with absorbing the aromatic molecules inside the molecule recognizing film'. Because the broad limitation of the specification recites that organic thin films formed on the electrodes and the information obtained by the organic thin films is transduced into electric signals by the transducing element, does not support the narrow limitation of the claim, which recites that there is an electric signals inside the molecule recognizing film wherein it is change by the absorbing aromatic molecules. Therefore, the specific limitation that the molecule recognizing film absorbing aromatic molecules to change in electric impedance in connection with absorbing the aromatic molecules inside the molecule recognizing film would not be encompassed by the scope of the invention as originally disclosed in the specification.

If applicants disagree, applicant should present a detailed analysis as to why the claimed subject matter has clear support in the specification.

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 11-12, 14-15, and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "absorbing" of claim 11 is vague and indefinite because it unclear what is being absorbed? The analyte? Or the chemical species of a sample solution? The buffer? Or a fluorescence molecule? Further, it is unclear how the film" is being defined by the term "absorbing. Because the term "absorbing" could define the film as a barrier in which certain molecules can pass through or a trap.

Response to Arguments

13. Applicant's arguments filed 10/16/02 have been fully considered but they are not persuasive. Applicant argument for the rejection under 35 USC 102(b) as being anticipated by Cozzette et al. (US Patent 5,200,051) in view of the amended claim 11.

14. Applicant contends that Cozzette et al. does not teach or suggest the claimed molecules recognizing film absorbs aromatic molecules to change in electric impedance, which is a newly added limitation.

It is the examiner position that Cozzette et al. does teach or suggest the claimed molecules recognizing film absorbs aromatic molecules to change in electric impedance. Because Cozzette et al. teach that the permselective layer or semipermeable film of the biosensor can comprise of the support matrices possess the physical and chemical features necessary to support the various bioactive molecules that constitute the principal means for converting the particular analytes in a given analytical sample into detectable and/or quantitatively measurable species (col. 12, lines 45-51). The film of Cozzette taught the newly added limitation and anticipates the claimed molecules recognizing film. Therefore, Cozzette et al. anticipates the presently claimed invention.

15. Applicant's arguments filed 10/16/02 have been fully considered but they are not persuasive. Applicant argument for the rejection under 35 USC 103(a) as being unpatentable over Cozzette et al. (US Patent 5,200,051).

Because applicant did not set forth any reason as to why the rejection 35 USC 103(a) for Cozzette et al. should be withdrawn. Therefore, the rejection is maintained because the traversal is moot.

16. Applicant has traverse the rejection under 35 USC 103(a) as being unpatentable over Heller et al. (US Patent 5,605,662) in view of Johnson (US Patent 4,216,245).

Because applicant did not set forth any reason as to why the combination of Heller et al. in view of Johnson is nonobvious over the presently claimed invention. Therefore, the rejection 35 USC 103(a) is maintained.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to My-Chau T. Tran whose telephone number is 703-305-6999. The examiner is on ***Increased Flex Schedule*** and can normally be reached on Monday: 8:00-2:30; Tuesday-Thursday: 7:30-5:00; Friday: 8:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew J. Wang can be reached on 703-306-3217. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1123.

mct
December 10, 2002

PADMASHRI PONNALURI
PRIMARY EXAMINER

PADMASHRI PO
PRIMARY EXAM